UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 09/664,832 | 09/19/2000 | Takahiro Yagishita | 197396US2 | 4937 |

22850 7590 04/21/2005

OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

| EXAMINER | |
|---|---|
| MENBERU, BENIYAM | |
| **ART UNIT** | **PAPER NUMBER** |
| 2626 | |

DATE MAILED: 04/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/664,832 | YAGISHITA ET AL. | |
| | Examiner | Art Unit | |
| | Beniyam Menberu | 2626 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *22 December 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-27* is/are rejected.

7)☒ Claim(s) *18* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *2/3/05, 9/24/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

### *Response to Arguments*

1. Applicant's arguments, see page 13-14, filed on December 22, 2004, with respect to the rejections of claims 1, 2, 5, 8-10, 13, 16, and 19 under U.S. Patent No. 6593935 to Imaizumi et al, have been fully considered and are not persuasive. Based on the amendment filed on December 22, 2004, a new ground(s) of rejection is made in view of U.S. Patent No. 6144763 to Ito further in view of U.S. Patent No. 5018008 to Asada. Therefore, this action is made final.

2. The disclosure is objected to because of the following informalities:

In the amendment to the specification, on page 2, beginning with :

"Please add the following new paragraph at page 18, between lines 23 and 24:

At step S7, …."

"At step S7," should be "At step S6, "

Appropriate correction is required.

### *Claim Objections*

3. Claim 18 is objected to because of the following informalities: There is "5" before component on last line of the claim. Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1, 2, 5, 8, 9, 10,13,16, 19, and 22-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6593935 to Imaizumi et al in view of U.S. Patent No. 6144763 to Ito further in view of U.S. Patent No. 5018008 to Asada.

Regarding claims 1,16, and 19, Imaizumi et al discloses a device, method steps, and program (Imaizumi et al disclose processors that are programmed to instruct the operation of the device (column 3, lines 1-3; column 4,lines 32-35) for processing images, comprising:

a compressing/coding unit configured to encode image data including a plurality of color components to produce encoded image data (Figure 1, reference 204; column 3, lines 61-64);

a memory unit configured to store the encoded image data produced by said compressing/coding unit, the memory unit having at least one memory space assigned to a part of the encoded image data, wherein the part of the encoded image data represents the plurality of color components (Figure 1, reference 205, 206; column 3, lines 33-36; column 4, lines 15-17; Figure 4, reference 2061YA, 2061CrA, 2061CbA);

a distribution-measurement unit configured to measure a distribution of the plurality of color components (Imaizumi et al discloses a chromaticity value extractor(Figure 3, reference 2034; column 7, lines 1-9). However Imaizumi et al does

not disclose a memory-control unit configured to release a the at least one memory space assigned to the part of the encoded image data, and to record data indicative of one of the plurality of color components in said memory unit, when the distribution concentrates on the one of the plurality of color components.

Ito discloses a memory-control unit configured to release a the at least one memory space assigned to the part of the encoded image data when the distribution concentrates on the one of the plurality of color components (column 7, lines 12-25; column 10, lines 63-67; column 11, lines 1-10).

Asada discloses a distribution-measurement unit configured to record data indicative of one of the plurality of color components in said memory unit (Asada discloses a counter which counts color components in an image as shown in Figure 8, reference 51. Since it is implemented as a register it is configured to store values of the counter (column 8, lines 28-50).).

Imaizumi et al, Ito, and Asada are combinable because they are in the same problem area of image compression.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the memory releasing mechanism of Ito and the color component recording of Asada with the image processor of Imaizumi et al to implement an efficient color image data encoder.

The motivation to combine the reference is clear because memory space can be saved using the system of Ito and color information can be determined of encoded image using the system of Asada.

Regarding claim 2, Imaizumi et al in view of Ito further in view of Asada teach all the limitations of claim 1. Further Imaizumi et al discloses a compressing/coding unit which includes;

a color-conversion unit configured to convert an input image into the image data including the plurality of color components (Figure 1, reference 201; column 3, lines 4-8);

a compression unit configured to compress the image data supplied from said color-conversion unit to provide compressed image data; (Figure 1, reference 204) ;

a quantization unit configured to quantize the compressed image data supplied from said compression unit (column 11, lines 15-22).

Regarding claim 5, Imaizumi et al in view of Ito further in view of Asada teach all the limitations of claim 1. Further Imaizumi et al discloses that the encoded image data produced by said compressing/coding unit includes brightness information, structure information, and color information (Imaizumi et al disclose that the codes produced by the compression consist of Cr, Cb data which is related to color information (column 7, lines 3-9). The codes corresponding to average value and gradation level of Y (column 11, lines 15-20) can be used to determine brightness and structure information (column 7, lines 17-21,lines 23-25)).

Regarding claim 8, Imaizumi et al in view of Ito further in view of Asada already discloses a compressing/coding unit, a memory unit, a distribution-measurement unit, and a memory-control unit as stated in claim 1. Further, Imaizumi et al in view of Ito further in view of Asada disclose a scanner unit configured to read an original image

(Figure 1, reference 102) and a printer unit configured to print data obtained by decoding the encoded image data stored in said memory unit (Figure 1, reference 103;column 2, lines 67; column 3, lines 1-2; column 4, lines 7-9).

Regarding claim 9, Imaizumi et al Imaizumi et al in view of Ito further in view of Asada teaches all the limitations of claim 8. Further Imaizumi et al disclose an image decoding unit configured to:

read the encoded image data and the data indicative of the one of the plurality of color components from said memory unit,

decode the encoded image data so as to provide decoded image, and

determine color components of the decoded image according to the data indicative of the one of the plurality of color components (Imaizumi et al disclose a secondary compression unit (Figure 1, reference 207) which relies on the attribute memory data for the expansion (decode) of secondarily compressed data (column 12, lines 5-10) (column 10, lines 42-44, 45-65). In addition Asada discloses counters used to determine color components of an image so in combination the color information can be determined.).

Regarding claim 10, Imaizumi et al in view of Ito further in view of Asada teaches all the limitations of claim 8. Further, Imaizumi et al teaches a color-conversion unit, a compression unit, and a quantization unit as stated in claim 2.

Regarding claim 13, Imaizumi et al in view of Ito further in view of Asada teaches all the limitations of claim 8. Imaizumi et al further teach codes that include brightness information, structure information, and color information stated in claim 5.

Regarding claim 22, Imaizumi et al in view of Ito further in view of Asada teach all the limitations of claim 1. Further Imaizumi et al in view of Ito further in view of Asada disclose the device as claimed in claim 1, wherein said distribution-measurement unit is configured to measure the distribution of the plurality of color components while the image data including a plurality of color components is being encoded (Imaizumi et al discloses a attribute discriminator and an encoder which receive the image signals from the background remover (Figure 1, reference 202) and process the signals in parallel (Figure 1, reference 203; column 3, lines 30-33, lines 44-48). Further Imaizumi et al discloses a chromaticity value extractor (Figure 3, reference 2034; column 7, lines 1-9).)

Regarding claim 23, Imaizumi et al in view of Ito further in view of Asada teach all the limitations of claim 1. Further Imaizumi et al in view of Ito further in view of Asada disclose the device as claimed in claim 1, wherein the distribution concentrating on the one of the plurality of color components correlates to the one of the plurality of color components occupying at least 80% of the plurality of color components (Asada discloses threshold values for color component detection (column 7, lines 9-35)).

Regarding claim 24, Imaizumi et al in view of Ito further in view of Asada teach all the limitations of claim 8. Further Imaizumi et al disclose the device as claimed in claim 8, wherein said distribution-measurement unit is configured to measure the distribution of the plurality of color components while the image data including a plurality of color components is being encoded (Imaizumi et al discloses a attribute discriminator and an encoder which receive the image signals from the background remover (Figure 1,

reference 202) and process the signals in parallel (Figure 1, reference 203; column 3, lines 30-33, lines 44-48). Further Imaizumi et al discloses a chromaticity value extractor (Figure 3, reference 2034; column 7, lines 1-9).).

Regarding claim 25, Imaizumi et al in view of Ito further in view of Asada teach all the limitations of claim 8. Further Imaizumi et al in view of Ito further in view of Asada disclose the device as claimed in claim 8, wherein the distribution concentrating on the one of the plurality of color components correlates to the one of the plurality of color components occupying at least 80% of the plurality of color components (Asada discloses threshold values for color component detection (column 7, lines 9-35)).

Regarding claims 26 and 27, Imaizumi et al in view of Ito further in view of Asada teach all the limitations of claims 16 and 19 respectively. Further Imaizumi et al in view of Ito further in view of Asada disclose the device as claimed in claim 16, wherein the distribution concentrating on the one of the plurality of color components correlates to the one of the plurality of color components occupying at least 80% of the plurality of color components (Asada discloses threshold values for color component detection (column 7, lines 9-35)).

6. Claims 3 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6593935 to Imaizumi et al in view of U.S. Patent No. 6144763 to Ito further in view of U.S. Patent No. 5018008 to Asada further in view of U.S. Patent No. 5740277 to Katto.

Regarding claim 3, Imaizumi et al in view of Ito further in view of Asada teaches all the limitations of claim teaches all the limitations of claim 2. However Imaizumi et al

in view of Ito further in view of Asada does not disclose a compression unit configured to perform sub-band conversion to compress the image data supplied from said color-conversion unit.

Katto discloses a sub-band conversion to compress the image data supplied from said color-conversion unit (Katto discloses a sub-band encoder in Figure 6 that can be applied to the output of the color conversion).

Imaizumi et al in view of Ito further in view of Asada and Katto are combinable because they are in the same problem area of image compression.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the sub-band encoder disclosed by Katto to the output of the color converter of Imaizumi et al in view of Ito further in view of Asada to perform the image compression.

The motivation to combine the reference is clear because sub-band encoding taught by Katto can perform entropy encoding (column 11, lines 6-10).

Regarding claim 11, Imaizumi et al in view of Ito further in view of Asada teach all the limitations of claim 10. Further Imaizumi et al in view of Katto disclose a compression unit configured to perform sub-band conversion to compress image data as stated in claim 3.

7. Claims 4 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6593935 to Imaizumi et al in view of U.S. Patent No. 6144763 to Ito further in view of U.S. Patent No. 5018008 to Asada further in view of U.S. Patent No. 6118552 to Suzuki et al.

Regarding claim 4, Imaizumi et al in view of Ito further in view of Asada teach all the limitations of claim 2. However, Imaizumi et al in view of Ito further in view of Asada does not teach a compression/coding unit further including a block-division unit configured to divide the input image into a plurality of blocks before the input image is supplied to said color-conversion unit.

Suzuki et al teach a block-division unit configured to divide the input image into a plurality of blocks (column 6, lines 33-39; Figure 1, reference 30).

Imaizumi et al in view of Ito further in view of Asada and Suzuki et al are combinable because they are in the same problem area of image processing.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the block division unit of Suzuki et al before the color conversion performed by the system of Imaizumi et al in view of Ito further in view of Asada.

The motivation to combine the reference is clear because it is advantageous to be able to process small blocks of image by dividing the input image into smaller blocks as taught by Suzuki et al.

Regarding claim 12, Imaizumi et al in view of Ito further in view of Asada teach all the limitations of claim 10. Further Imaizumi et al in view of Ito further in view of Asada further in view of Suzuki et al disclose a block-division unit which divides the input image into a plurality of blocks before the input image is supplied to said color-conversion unit (Suzuki et al: column 6, lines 33-39; Figure 1, reference 30)..

8. Claims 6, 7, 14,15, 17, 18, 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6593935 to Imaizumi et al in view of U.S. Patent No. 6144763 to Ito further in view of U.S. Patent No. 5018008 to Asada further in view of U.S. Patent No. 5990876 to Shyu.

Regarding claims 6,17, and 20, Imaizumi et al in view of Ito further in view of Asada teach all the limitations of claims 1, 16, and 19 respectively. Further Imaizumi et al discloses a quantization unit, a method step, and program configured to quantize the compressed image data supplied from said compression unit (column 11, lines 15-22). However Imaizumi et al in view of Ito further in view of Asada does not disclose a compression unit, method step, and program configured to compress the image data including the plurality of color components to provide compressed image data, wherein the plurality of color components are R, G, and B components.

Shyu discloses a color converter, color conversion method and program (column 11, lines 58-63) for converting RGB to YCrCb which teaches that YCrCb components depend on R, G, and B components. Thus when the converter of Shyu is applied to the system of Imaizumi et al, the YCrCb components inputted to the compression unit of Imaizumi et al (Figure 1, reference 204) will be of image data including the plurality of color components wherein the plurality of color components are R, G, and B components (column 5, lines 50-56).

Imaizumi et al in view of Ito further in view of Asada and Shyu are combinable because they are in the same problem area of image processing.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to apply the color converter of Shyu in the system of Imaizumi et al in view of Ito further in view of Asada.

The motivation to combine the reference is clear because Shyu teaches that YCrCb color components are better for compression applications (column 1, lines 25-32).

Regarding claims 7,18 and 21, Imaizumi et al in view of Ito further in view of Asada further in view of Shyu teach all the limitations of claims 6,17, and 20 respectively. Further, Shyu teaches that the YCrCb components are a function of the difference (R-G) and (B-G) (column 5, lines 50-56). Thus if the converter unit, the conversion method and program of Shyu is applied to the system of Imaizumi et al, the distribution-measurement unit of Imaizumi et al (Figure 1, reference 203) which measures a distribution of the color components as stated in claim 1 will measure the distribution of the plurality of color components with respect to a (R-G) component and a (B-G) component.

Regarding claim 14, Imaizumi et al in view of Ito further in view of Asada teach all the limitations of claim 8. Imaizumi et al in view of Ito further in view of Asada in view of Shyu disclose a compression unit and a quantization unit as stated in claim 6.

Regarding claim 15, Imaizumi et al in view of Ito further in view of Asada in view of Shyu teach all the limitations of claim 14. Further Shyu disclose distribution-measurement unit that measure the distribution of the plurality of color components with respect to a (R-G) component and a (B-G) component as stated in claim 7.

***Other Prior Art Cited***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent No. 5672016 to Miyano disclose method for color control.

U.S. Patent Application Publication No. US 2003/0133506 A1 to Haneda disclose image processor.

U.S. Patent No. 4819063 to Sugiura et al disclose data processor.

***Conclusion***

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Beniyam Menberu whose telephone number is (571) 272-7465. The examiner can normally be reached on 8:00AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kimberly Williams can be reached on (571) 272-7471. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the customer service office whose telephone number is (571) 272-2600. The group receptionist number for TC 2600 is (571) 272-2600.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov/>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

***Patent Examiner***

Beniyam Menberu

BM

04/17/2005

KA Williams

KIMBERLY WILLIAMS
SUPERVISORY PATENT EXAMINER